"COMPARATIVE STUDY OF COMPLICATIONS IN CATARACT EXTRACTION WITH AND WITHOUT ANTERIOR CHAMBER INTRAOCULAR LENS IMPLANT"

THESIS

FOR

MASTER OF SURGERY

(OPTHALMOLOGY)

BUNDELKHAND UNIVERSITY
JHANSI (U. P.)

1990 BIKRAM SINGH BIST

C E R T I F I C A T E

This is to certify that the work entitled "COMPARATIVE STUDY OF COMPLICATIONS IN CATARACT EXTRACTION WITH AND WITHOUT ANTERIOR CHAMBER INTRAOCULAR LENS IMPLANT" which is being submitted for thesis of M.S. (Ophthalmology) by Dr. BIKRAM SINGH BIST has been undertaken by the candidate under my supervision and guidance. He has carried out the work independently and his observation were periodically checked by me.

He has also completed the required period of stay in the department.

Dated: Sept.,1989.

(G.D.GUPTA)
M.S.,D.O.M.S.
Reader and Head,
Department of Ophthalmology,
M.L.B. Medical College,
Jhansi.

(SUPERVISOR)

CERTIFICATE

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Dated: Sept.,1989.

(B.S.JAIN)
M.S.
Lecturer,
Department of Ophthalmology,
M.L.B. Medical College,
Jhansi.

(CO-SUPERVISOR)

A C K N O W L E D G E M E N T S

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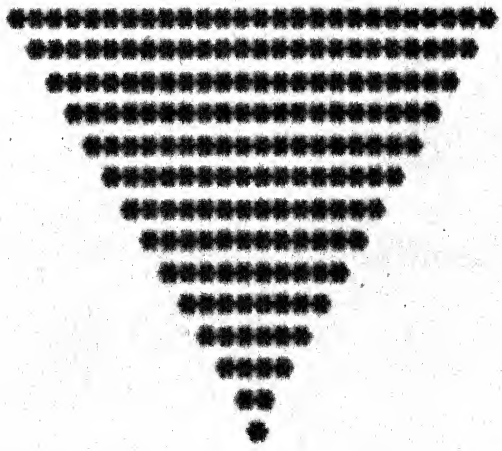
At last but not least to the patients without whose cooperation this study could not be made success. I shall remain thankful for ever.

Dated: 15 Sept.,1989. (BIKRAM SINGH BIST)

C O N T E N T S



INTRODUCTION

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Development of cataract is a common problem after the age of fifty years. Hence it is a leading cause of blindness in the old age. The only treatment of the cataract is extraction of cataracteous lens by extracapsular or intracapsular extraction method.

Cataracteous changes may also occur in the early age of life as a congenital cataract or other stages of life due to different etiologies.

After extraction of the lens, the person becomes highly hypermetropic and accommodation is lost as well. The dioptric system must therefore be supplemented by a strong converging lens, usually +10.00D in previously emmetropic eye.

The spectacles had been conventional method of aphakic correction since long ago.

There are many disadvantages with the aphakic glasses like, magnification of image about 33%, false orientation of distance, ring scotoma, binocular diplopia if the other eye has good vision and spherical aberration.

Apart from it, bearing heavy spectacles are uncomfortable, cosmetically the individual looks awkward and job prospects are also jeopardised.

Many of these problems are overcome by the use of contact lenses, which also have many disadvantages like, difficulty in management and handling by the elderly patient, inability to use for longer period, and chances of loss in active life like drivers, sportsmen etc. The magnification at times is nontolerable. The contact lenses can not be worn in dusty environment, dry eye and eyes with filtering operation.

The disadvantages of aphakic glasses or contact lenses are markedly overcome by use of intraocular lens implants. Optically also they are the right replacement of cataractous lens.

There are many types of intraocular lens implants (IOL) in use, of which different types of anterior chamber IOL, iris supported IOL implants and posterior chamber IOL implants are available.

The placing of anterior chamber IOL implant is an easier procedure and can be easily adopted without sophisticated equipment and instrument especially in small hospitals.

The intraocular lens implants have been reported to show high incidence of complications in relation to the conventional methods. The present study has been undertaken to compare the complications in cases of cataract extraction with and without anterior chamber intraocular lens implantation and to evaluate the use of anterior chamber implant.

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REVIEW OF LITERATURE

REVIEW OF LITERATURE

The first person who probably mentioned the possibility of lens implantation was a peripatic ophthalmologist of the 18th century named Tadini.

In 1795 casamata the court eye doctor of Dresden performed cataract operation and implanted an artificial lens. The artificial lens was made of a glass and it was inserted through wound of cornea into the eye. He realised however that the glass lens could not substitute for the natural lens because during this experiment, the glass fell onto the bottom of the eye.

In 1949 at the end of cataract operation Ridley was asked by a medical student why he did not replace the sick lens with a new one. This question gave Ridley the impetus to explore the possibility of lens implantation. He designed a lens to imitate the natural lens, made of acrylic material after seeing as particles of inert material lodged in the eyes of fighter pilots injured during world war II.

The first intraocular lens was implanted by Ridley into the capsular bag following extracapsular cataract extraction at St. Thomas Hospital London on 29th November 1949 and second was implanted on 23rd August

1950. Ridley implanted approximately one thousand of his original IOLs. Many of his cases remain successful as late as 1966. By 1970 15% of his implants were removed.

Around 1959 Ridleys lens implantation were given up due to numerous postoperative complications like severe post operative reaction, iritis, occlusion of the pupil by dense inflammatory membrane, late thickening and opacification of the posterior capsule, loss of anterior chamber, hyphaema, secondary glaucoma, iris atrophy from pressure by PHPA, decentring and IOL dislocation. Decentring and IOL dislocation were common. These were as a result of inadequate support and stabilisation of the fairly heavy IOLS. In 1954 Parry attempted to solve the problem of dislocation by anchoring the Ridley IOL by means of a tantalum thread with the ends left loose beneath the conjunctiva. Ridley's lenses are described as first generation lenses.

The complications and technical difficulties associated with original Ridley posterior chamber IOL led to attempt to place the pseudophakos in the anterior chamber using the angle recess for fixation purpose. There were several major advantages of anterior chamber

fixation like implantation could be performed after either intracapsular or extracapsular cataract extraction, as secondary implantation and minimum dislocation of the IOL. These are described as second generation lenses.

Baron on 13 May 1953 was the first to implant a anterior chamber lens. It had the shape of a curved disc bent toward the cornea to such an extent that it came into contact with corneal endothelium. This introduced a problem that has been frequently encountered with many other style of anterior and iris supported IOLs, namely direct contact with the corneal endothelium leading to corneal decompensation.

The Strampelli tripod anterior chamber lens was first implanted on September 28, 1953. This became the prototype of rigid type anterior chamber lens.

Dannheim in 1952 designed the first flexible closed loop type of anterior chamber lens. This lens failed because the haptic were manufactured from nylon (Supramid-6). This polymer undergoes a hydrolytic biodegradation when implanted in biological tissues. This led not only to irritation within the eye but to the breakdown of the loops and actual disintigration of the IOL with dislocation.

Barrequer modified the Danheim lens and his own closed loop anterior chamber lens by cutting away one half of the closed loop in essence creating the first J-loop intraocular lens.

The first choyce rigid anterior chamber (Mark I) appeared in 1956. Numerous modification of this lens have culminated in the production of the mark VIII and mark IX IOL. Complication such as uveitis glaucoma Hyphema (UGH) syndrome of Ellingson were initially attributed to warped foot plates and poor edge finish on some poorly made copies of choyces lens. However these problem have been corrected by improvement in manufacturing techniques. Thus various modern anterior chamber lens have been produced since 1980 (Table 1). The most popular anterior chamber lenses at present are shepard universal IOL, Pannu universal IOL, universal radial C-loop IOL, Freeman universal IOL).

In June 1953 the development of iris supported lenses began with the introduction of the Epstein 'Collar Stud' lens. This was essentially an anterior chamber lens with iris fixation. The original iris clip lens was developed by Binkhorst in 1957 and was used for the first time on August 11, 1958. Binkhorst designed his lenses based on the facts that PMMA is well tolerated, posterior chamber lenses had, had a strong tendency to dislocate.

anterior chamber lenses had a strong propensity to cause corneal complication, Ridley posterior chamber lense with posterior surface of iris did not in it self give rise in any complication. He believed that iris atrophy and its consequence were caused by uveitis and not by contact.

In effect the idea of iris fixated lenses represented an attempt to avoid major complication of posterior chamber lenses and the most important complication arising from anterior chamber lenses nemely corneal touch and decompensation.

Other modification of iris supported IOLs included Binkhorst modification of his original IOL (Binkhorst 2 loop iridocapsular lens) the use of metal as a loop material, the introduction of Epstein Maltese cross lens (which evolve into the Copland lens) introduction of Fyderov Style IOL (Sputunik iris clip lens), the Worst Medallion Irido capsular lens and Worst platina lens. Many of the these iris supported lenses were very successful and did much popularise the concept of intra ocular lens implantation throughout the world. However various long term complications were

noticed with these IOL styles in many cases. This led to an eventual abandonment of these styles in favour of well designed modern anterior chamber and posterior chamber lenses. From 1975 to the present information from the extensive clinical experience with IOL during the past decade has contributed to a rapid and highly innovative era of IOL development of utmost importance has been the increasing use of ICCE and posterior chamber implantation. Numerous modern well designed anterior chamber IOL have been introduced. There has been continuous improvement in lens design and in IOL manfacturing techniques are far more refined and are safer. This is the era where iris supported lenses began to give way to the more modern IOL styles. This era has also seen the transition from nylon to polypropylene and PMMA as loop material.

Lens implantation intensified the interest in the corneal endothelium. New methods of examination (such as specular microscopy, pachymetry scanning electron microscopy) are constantly expanding our knowledge of the physiologic, physical and chemical properties and role of the endothelium. New ways are being sought to protect the cells by using safer material

(different plastics, glass, silicone etc.) which are less toxic and dangerous to the endothelium than PMMA, by coating existing lenses with such substances as methyl cellulose, sodium hyaluronate (Healon), chondroitin sulfate and serum. Ultraveilet rays filtering dyes are added to the lens to protect the macula from harmful radiation.

Table 1

Evolution of intraocular lenses

Generation I (1949-54) original Ridley posterior chamber
1. Ridley 1949
2. Parry (Implantation modification, 1954)

Generation II (Ca 1952-1962) Development of Anterior chamber lenses
1. Rigid or Semirigid
Baron 1952, 1954
Scharf, 1953
Strampelli tripod, 1953
Schreck, 1954
Bietti, 1955
Choyce Mark I 1956
Ridley Mark I and II 1957, 1960
Boberg - Ans 1961
2. Flexible or Semiflexible loops
a. Closed loops
Dannheim 1952
Strampelli 1956
Lieb and Guerry 1957
b. Open loops
Barraquer, J-loop 1959

Generation III (Ca 1953-1970) Continued development of anterior chamber lenses and introduction of iris-supported lenses

Anterior chamber

1. Rigid or Semirigid
   choyce mark II 1957 to choyce mark VIII,1963
2. Flexible.
   iris supported
   Epstein "Collar stud lens, 1953
   Binkhorst iris clip 1957, 1958
   Epstein maltese cross (Evolved into copeland-Binkhorst lens)1962
   Fyodorev type I iris clip 1964
   Binkhorst iridocapsular 1965
   Fyodorev V-type II Sputumik iris clip 1968
   Worst Medallion iridocapsular, early 1970s
   Worst Platina early 197 0s

Generation IV (Ca 1975 to present) - Major improvement in microsurgical techniques, lens designs and lens materials introduction of posterior chamber lens.

Anterior chamber lenses

1. Rigid or semirigid
   Azar Mark II 1977
   Tennant Anchor 1974
2. Flexible or semiflexible loops or foot plates
   a. closed loops
      Leiske 1978
      Hessburg 1981
      Optiflex 1981
      Azar 91Z 1982
      Stable flex 1983
   b. Open loops or footplates
      Kelman II 3-point fixation 1978
      Kelman Osnidriflex 1981
      Kelman osnifity 1981
      Kelman Multiflex 1982

c. Radial loops
Copeland 1982

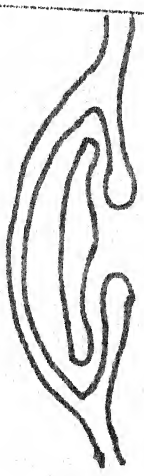
Posterior chamber lenses

Pearce rigid triped 1975
Shearing J-loop mid to late 1970 early 1980s
Simcoe C-loop, mid to late 1970s early 1980s
Sinsky, modified J-loop mid to late 197 0S early 198 0S
Kratz modified J-loop mid to late 197 0S early 198 0S
Clayman modified J-loop mid to late 197 0S early 198 0S
Harris, 1 open, I closed loop, modified J-loop
closed modified J-loop both loops closed eg. Sheets, Galand, Knolle
Osher - Fenzl modified J-loop with loopholes at tips of superior loop
Ridged lenses for YAG laser capsulotomy e.g. Neffer ridge
IOLs with UVR absorber in optics
- IOLs with biconvex or aspherical optics
- Lynell glass optic
- Mazzocco silicone (elastic) IOL
- Universal type (designed to be placed either anterior or posterior chamber (early 1980s)
- Shepard Universal (radial loops)
- Feaster, Duolens
- Pannu type III

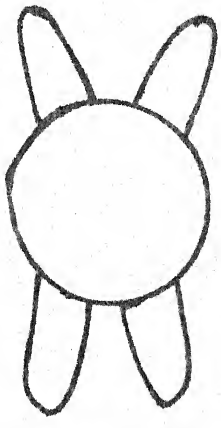
Generation V Improvement in material and design of anterior and posterior chamber lenses and introduction of visco elastic substance in ophthalmic surgery.

ANTERIOR CHAMBER ANGLES FIXATED LENSES IN PAST

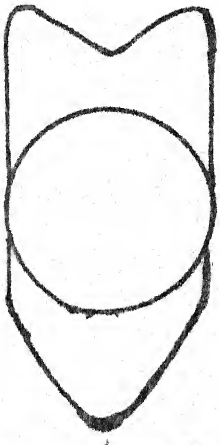
BARON



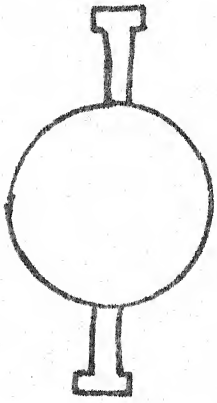
BARON



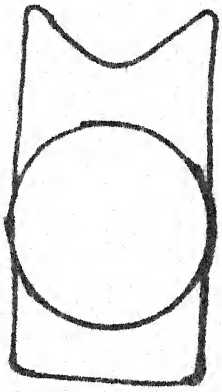
SCHARF



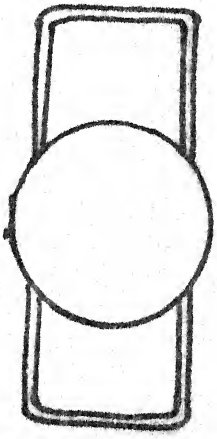
STRAMPELLI



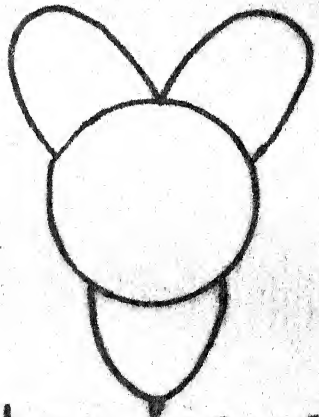
SCHRECK



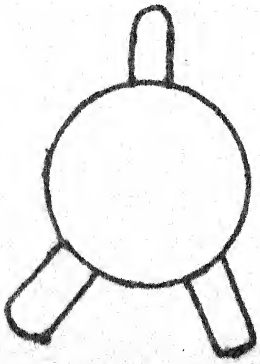
BIETTI



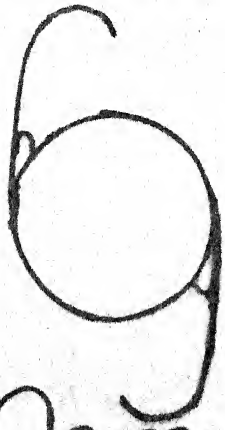
DANNHEIM



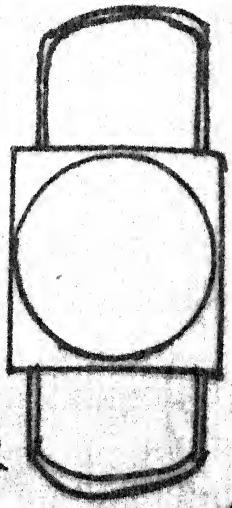
LIEB & GUERRY



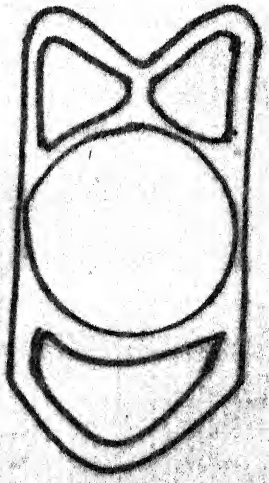
LEY MARK-I



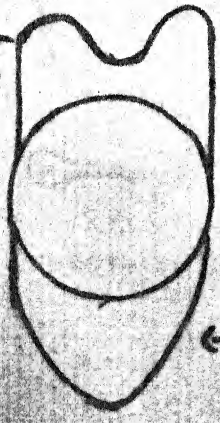
BARRAQUER



BARRAQUER

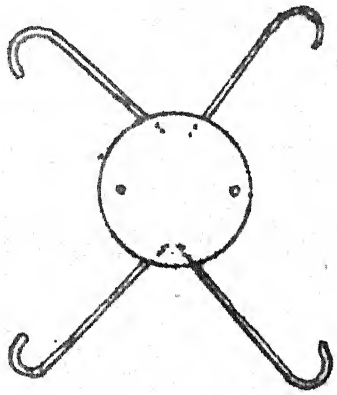


BOBERG-ANS

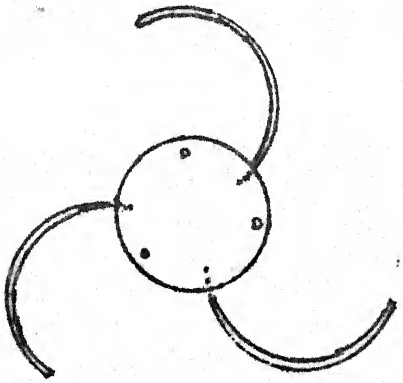


← CHOYCE MARK-I

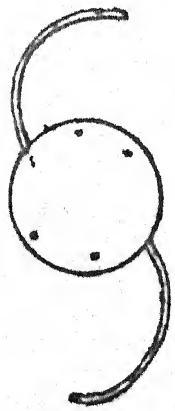
MODERN ANTERIOR CHAMBER ANGLE FIXATED INTRAOCULAR LENSES



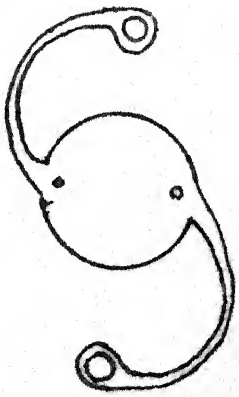
SHEPARD UNIVERSAL IOL



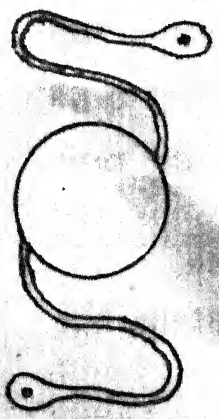
DUBROFF AC IOL



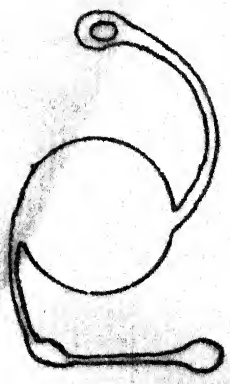
MARK IV



PANNU LENS



SOFT-S-LENS



KELMAN FLEXIBLE IOL

COMPLICATIONS DURING CATARACT EXTRACTION WITHOUT LENS IMPLANT

The occurrence of vitreous loss has been shown by J. Watts (1979-1983) in 3 cases out of 181 patients. Gholam A. Peyman cited the incidence 2-4%. The figure of OCTET (1984) was 2 out of 56 cases. P.N. Nagpal et al (1985) reported vitreous loss in 12 cases out of 200 cases. J.F. Acheson et al (1988) reported 5% of 39 eyes and 3% of 50 eyes. Arun Nathur et al (1984) reported 5.35% incidence of vitreous loss.

The incidence of unplanned extracapsular extraction has been reported to be 4% (Gholam A Peyman) OCTET (1984) reported in 2 cases out of 56 cases. P.N. Nagpal et al (1987) encountered in 9 (out of 200) J.F. Acheson et al (1988) in 4(10%) of 50 eyes, and 4.47% was reported by Arun Nathur et al (1984).

The incidence of hyphaema encountered by Oxford cataract treatment and evaluation team (OCTET) (1984) was 4 out of 56 cases, in another study it was 2 out of 42 patients. OCTET (1984) encountered torn iris in one case out of 56 cases.

Expulsive haemorrhage is one of the most dramatic and serious complication of cataract surgery. Fortunately

it occurs in only 0.1 to 0.2% of all cataract extraction (Gholam A, Peyman, Duke elder).

POST OPERATIVE COMPLICATIONS WITH SIMPLE CATARACT EXTRACTION

J. Watts (1979-1983) reported complication rate 4% in a series of 181 eyes in simple cataract extraction (ICCE).

Striate Keratitis was reported 23% (R.K. Mishra et al 1985) he also reported filamentary Keratitis in 6% cases (Mild to moderate).

The incidence of flat anterior chamber has been reported in 4% cases (Gholam A Peyman) during early postoperative period which is caused either by wound leakage or pupillary block or combination of two. In OCTET study (BJO 1984) of 333 eyes it occurred in one eye. Laxaman Rao Y et al (1980) encountered in 7.9% cases in a study group of 145 patients. There was one case of flat anterior chamber with secondary glaucoma in the study of 50 eyes (B.T. Maskati et al 1982). I.M. Huddappa et al (1985) reported 5.3% and 2.7% in two different study groups. The incidence was 12.2% as reported by H.K. Singh et al 1984. Arun Mathur et al found leaking wound in 0.67% cases. The incidence of hyphema has been reported in 7 cases by OCTET study (BJO 1984) in the study group of 333 eyes, J.F. Acheson et al (1988)

reported persistant hyphema in 2 cases out of 89 eyes, in a study group of I.N. Muddappa et al it was reported 2.7%. Arun Mathur et al encountered in 1.11%, and it was 6% in the study group of P.N. Nagpal et al (1983), he also reported intra vitral haemorrehage in 1%.

Conjuntival bleb was reported in 3 cases out of 333 eyes (OCTET 1984), in 4.8% out of 645 cases (Laxman Rao Y. et al 1980), in 4 cases of out of 100 patients as reported by P.N. Nagpal et al (1983).

Corneal oedema was reported in one case out of 333 eyes (OCTET 1984), in 9% cases out of 89 eyes (J.F. Acheson et al 1986), in 1% of the 500000 cataract extraction (Gholam A.Peyman). Endothelial corneal dystrophy was reported in 2 cases out of 150 cases as late complication (Daljit Singh 1981), J. Watts (1979-1983) reported corneal decompensation in 2 cases out of 181 eyes as a late complication. In the study by OCTET (1984) the occurrence of Uveitis was found in 2 cases (severe) out of 333 eyes. R.K. Mishra et al (1985) reported incidence of iridocyclitis in 12% cases (Mild), 10% (moderate) and 1.6% (severe) and vitreitis 2.2%. Daljit Singh 1981 encountered in 3-4% cases in early post operative period and 2 cases of iritis and 2 cases vitreitis out of 150 cases in the late

post operative period. In the study of Arun Mathur et al the incidence of iridocyclitis remained 8.93% whereas P.N. Nagpal et al (1983) reported in 6% cases.

Endophthalmitis was reported by OCTET (1984) in one eye (of 333 eyes), 0.1%-0.6% (editorial BJO 1989), 0.20% (Arun Mathur et al) and P.N. Nagpal et al (1983) reported in 1% case.

Choroidal detachment was encountered in one case (OCTET study 1984) of 333 eyes, Daljit Singh (1981) noticed in 2 cases (of 150 cases), Arun Mathur et al found in 0.67%, Gholam A. Peyman reported in 5-8%, and in one case out of 50 cases by B.T. Maskati et al (1982).

Raised intra ocular pressure was reported in 18 eyes (of 333 eyes) by OCTET study (1984), J.F. Acheson et al (1988) encountered in 13% and 28% cases in two different study groups, B.T. Maskati et al (1982) reported secondary glaucoma in one case (associated with shallow anterior chamber) out of 50 eyes, 2% was reported by Gholam A Peyman.

The OCTET study (1984) of 333 eyes reported iris in the wound in one case, vitreous to section in 3 cases, episcleritis in 2 cases, displaced pupil in one case,

hypopyon in 2 cases and vein occlusion in one case. R.K. Mishra et al (1985) found average duration of inflammation in the eye for 1-2 weeks.

J.F. Acheson et al (1988) noticed lens capsule remanent in 1% case and haemorrhagic vitreitis in 5% cases B.T. Maskati et al (1982) reported vitreous face in the anterior chamber in 16 cases (of 50 cases) at 6 week period. Vitreous touch syndrome was reported in 2% cases (P.N. Nagpal et al 1983).

The incidence of cystoid macular edema (CME) has been reported in 3% cases by J.F. Acheson et al (1988) out of 89 cases, 40-50% at 6 weeks by fluorescein angiography method (Gholam A. Peyman) 15 to 47% fluorescein angiography method (Alpar, Fechner), Jaff et al (1981) figured in 8.5% cases. J. Watts (1979-83) did not encountered any case of CME among 181 cases. The incidence of CME was 2% in the study group of P.N. Nagpal et al (1985), R.K. Mishra et al (1985) reported in 9% cases.

The incidence of retinal detachment has been reported 2.5% in aphakic eyes and occurrence of such cases was 50% in first year (W.E. Benson), 2% incidence was reported by Duke Elder, J. Watts (1979-1983) encountered in 2 cases in the study group of 181 eyes.

Jaff et al (1981) reported 1.8%, in OCTET (1984) study of 333 eyes retinal detachment occurred in 1 case, J.F. Acheson et al (1986) found in 2% cases, and 2.2% (Gholam A. Peyman), P.N. Nagpal et al (1983) encountered in 2% cases.

The incidence of epithelial in growth has been reported in 0.1% of all cataract cases (Gholam A. Peyman). Implantation cyst in anterior chamber after cataract surgery was reported in 3 cases (Laxmi Narayan et al 1983) at 6 months to 2 years period. Occurrence of ptosis (2mm) following cataract surgery has been reported in 6.2% (N.I. Price et al 1989) which persist for 6 months. Kaplan et al (1980) reported in 13.5% following local anaesthetic infiltration.

The visual acuity results given by J. Watts (1984) after aphakic correction were 6/12 or better achieved by 83% cases and less than 6/12 were achieved by 17% cases. In the study group of 200 cases P.N. Nagpal et al (1983) the visual acuity results were 6/6 achieved by 42 eyes, 6/9 by 55 eyes, 6/12 by 49 eyes, 6/18 by 18, 4/24 by 14, 6/36 by 9, 6/60 by 4, less than 6/60 8 eyes, complete loss occurred in one case.

Arun Mathur et al (1983) reported the visual results of 150 cases 6/6 (45-71%), 6/9 (21.28%) 6/18(3.19%) 6/24 (5.31%), 6/36 (3.19%) 6/60 (2.12%) 1/6-3/60 (0.6%). The causes of low vision were macular degeneration (2%), Myopic degenerative 6%, central retinal vein occlusion 1%.

In the study group of OCTET (1984) out of 116 cases the visual acuity were 6/5 achieved by 30 cases, 6/60 by 40 cases, 6/9 by 29 cases, 6/12 by 10 cases, 6/18 by 2 cases, 6/24 by 2 cases, 6/36 was achieved by on case, 6/60 by 1 and CF by 1.

OPERATIVE COMPLICATIONS IN CATARACT EXTRACTION WITH IOL IMPLANT:

Orbital haemorrhage is a major complication of retrobulbar injection. Nikhil C. Kaushik (1981-1983) encountered in 26 cases out of 3453 patients Subhash P. Kadam (1987) saw in 6 cases out of 146 patients. All cases withretrobulbar haemorrhage were postponed for operation.

With the modern microsurgical techniques vitreous loss is estimated to occur in 2 to 4% (Gholam A. Peyman). In a study of 100 cases Vilas Bidaye (1988) reported vitreous loss in 2% cases, other authors like R.K. Mishra

et al.(1986) reported in 2 cases in a series of183 patients, J. Watts (1979-1983) reported in 1 case out of 44 patients. In a series of 53 (eyes) it was reported to be 26% (Arch ophth 1987). Vitreous loss follows lens extraction when the viteous is either pushed out of the eye by external pressure on the globe or pulled out by vitreous attachment to the lens. It is postulated that a subclinical subchoroidal haemorrhage or serous choroidal effusion could also cause unexplained vitreous prolapse (Gholam A. Peyman).

S. Bharti et al (1984-86) in a study of 100 cases described disturbances of vitreous face. If vitreous remains in the anterior chamber with treatment the implantation should be abandoned.

INTRA OPERATIVE SHALLOWING OF ANTERIOR CHAMBER

Prolapsing iris and bulging of vitreous causes shallowing of anterior chamber during operation. M.C. Mehata (1985) in a study of 20 cases reported vitreous bulge in 2 cases, bulging of iris lens diaphragm in 2 cases. Subhash P. Kadam (1987) reported, high vitreous pressure in 4 patient in the study of 146 cases and described that if vitreous pressure (Positive vitreous pressure) is high, no implantation should be carried out. In shallow anterior chamber, it is difficult to retain the anterior chamber with air. Air usually escapes when the lens is

being inserted. Tucking of iris commonly occur. With the use of visilon these complications are nil (S. Tony Fernandez 1989). Hyphaema: It is common complication during intraocular surgery. It is usually not significant and stops spontaneously (S. Bharti et al 1984-1986). The source of bleeding may be from iris and schlemm's canal (Subhash P. Kadam 1987). He reported hyphaemain 18 cases out of total 146 patients. In another study it was encountered in 8% cases (AJO 1989).

Incarceration of haptic into wound and iris: on occasion especially during learning phase of the surgery one or very rarely two feet of haptic of an anterior chamber angle fixed lens may not be placed properly under the scleral edge but left in the wound (Fechner) S. Bharti et al (1984-1986), in a study of 100 cases described about difficulty in introduction of the IOL, tucking of the iris with the haptic and breaking the feet of the intraocular lens during implantation in the anterior chamber. Lens loop may be engaged in the iris if pupil is kept dialated during implantation (Subhash P. Kadam 1987).

POST OPERATIVE COMPLICATIONS IN CATARACT EXTRACTION WITH IOL [illegible]

A mild degree of corneal oedema with folds in descemets membrane is commonly seen post operatively. It indicates the extent of operative trauma to the corneal endothelium (Fechner). The incidence of Striate Keratitis (Mild to moderate) has been reported 70% (R.K. Mishra et al 1985) in a series of 183 patients, Daljit Singh et al (1984) encountered in 18.1% (with visilon) 12% (IOL without visilon) in an experimental study on rabbit. O.P. Billore, et al (1986) reported in 29-5% (with rigid anterior chamber IOL) and 19.82% (Flexible IOL) in the study of 500 patients. It was 2% incidence in the study of vilas Bidaye (1988) in 100 cases of intraocular lens implantations. Various other authors reported incidence of striate Keratopathy in different series of studies like 8 cases in a study of 146 cases (Subhash P. Kadam, 1987), in 4 cases (without visilon) and 6 cases (with visilon) in series of 60 IOL implants (S. Tony Fernandez et al 1986). Slight in 19.6% and moderate in 9.8% cases out of 100 cases (Daljit Singh et al 1983) in 2 cases in a study group of 12 patients (N.S. Raju 1983) and in 13 cases in the study group of 20 cases of M.C. Mahata (1985), he also reported corneal oedema in 15 eyes in the same study group. Post operative iridocyclitis may

occur due to infection or may be related to surgical manipulation or occurring as a response to transient breakdown of blood aqueous barrier. The incidence of iridocyclitis was reported by R.K. Mishra et al (1985) to be mild 22%, moderate 63% and severe 11% in a study group of 185 patients. In the same series the incidence of vitreitis was 4-5% and endophthalmitis nil. In a study group of 500 IOL implantation O.P. Billore et al (1986) encountered uveitis in 14.7% (Rigid anterior chamber IOL) and 9.8% (flexible IOL) and 2% was found in a study group of vilas Bidaye (1988). In the study group of 146 cases, Subhash P. Kadam noticed iritis in 17 cases (mild) 6 cases moderate and severe in one case.

M.C. Mahata (1985) reported in 4 eyes (of 20 eyes). In S. Tony Fernandez et al's study group of 60 patients mild iritis occurred in 2 (done without visilon) and 4 (where visilon was used). In another series of 100 cases, Daljit Singh et al (1983) studied in 11.5% cases severe uveitis was reported in 0.9% (R.K. Mishra 1989), persistent iritis 0.4-1.2% (F.D.A. study). 5 patients out of 7 patients (Daljit Singh 1980), N.S. Raju (1985) reported persistent uveitis in 8-66% cases. Infectious endophthalmitis is a potentially devastating complication of any surgical

procedure including IOL implantation most studies have found that infectous endophthalmitis does not occur with high frequency following IOL implantation than one could anticipate following simple cataract removal. Two major epidemic occurred in 1975 and 1976 (Apple D.J. et al 1984, Fechner, Alpar). The cause of infectious endophthalmitis was contamination of neutralising solution (Sodium bicarbonate). In 1975 13 patient developed fungal endophthalmitis following IOL implantation. In 1976 8 patient developed pseudomonas aerogenous endophthalmitis. The incidence of toxic lens syndrome (Sterile endophthalmitis) has been reported to be 7% by dry pack method and 1.5% wet pack method of sterilization (Apple D.S. et al 1984, Alpar 1982). In a study group of 146 patients Subhash P. Kadam (1987) reported endoophthalmitis in one case 4½ month after operation. In the study group to 158 cases S. Bharti et al (1985) also encountered iritis and endophthalmitis. There was no incidence of endophthalmitis or any kind of infection in study group 185 patients (R.K. Mishra et al 1985) and 25 patients of Y.N. Paranjpe (1983) study.

A shallow or flat anterior is an absolute emergency in the eyes that have anterior chamber IOL. Since the contact between IOL and corneal endothelium is extremely

damaging to the cornea. The majority of such cases result from wound leak (Fechner). Daljit Singh et al (1983) reported the incidence 1.6% in a case study of 100 patients. In a study of 158 patients S. Bharti et al (1984-1984) also encountered similar incidence.

Tucking of iris (entrapped fold of peripheral iris tissue) in the angle by haptic, usually occur during insertion, if IOL is angled too posteriorly. An oval pupil with vertical axis parallel to the axis of the IOL is characteristic, but this may not be readily apparent when the pupil is partially dialated at the time of surgery. R.K. Mishra et al (1985) reported in the study group of 185 patient the incidence of iris tuck and distorted pupil in 15% cases, riding of pupillary margin over the lens in 2% cases, upper loop engaging in iridectomy in 2% cases, axial rotation of the lens in 5% cases, adhesion between the lens and iris in 4% cases, anterior dislocation and superior loop slipping out in 0.3%, air behind the implant in 1.6% cases, precipitate deposition on the IOL with no uveitis in 7% cases. Mild distortion of the pupil was found in 3%, moderate in 4.9% and marked 2%. Iris atrophy at the contact with IOL was in 10.9% (mild), 1.6% (Moderate) and 2.1 (Severe). In a study group of 500 patients O.P. Billore et al

(1986) reported iris tuck in 22.02% (Rigid IOL) and 8.19% (flexible IOL), pupillary distortion in 28.16% (Rigid IOL) and 8.13% (flexible IOL), lens matter in pupil 9.68% (Rigid IOL) and 1.16% (flexible IOL), Pigment dispertion in 24.22% (Rigid IOL) and 13.11% (flexible IOL). Vilas Bidaye (1988) reported opacification of lens in 1% in a study of glass lenses in 100 patients. Subhash P. Kadam (1987) reported in his study group of 146 cases the incidence of iris tuck in 6 cases and internal iris prolapse 4 cases. The tremulousness of the implant occurred in 2 cases. Ciliary tenderness was found in 2 cases.

In a study group of 220 cases R.K. Mishra et al (1989) in 5 years study period revealed iris atrophy in 60%, pupillary capture 4.5%, tilt or rotation of IOL in 8.1%, irregular anterior chamber depth in 2.2% liberation of pigment in 30%, K.P.'s 2.2%. In 25 IOL implanted cases Y.N. Paranjpe (1983) found iris pigment deposits on IOL surface and anterior vitreous face on 3rd day which reduced after 15 days of operation. N.S. Raju (1983) did not find pigment deposits on the IOL in a study group of 12 patients. There was no incidence of dislocation. The circumciliary flush of low grade persisted in 6 cases (50%) for 2-3 weeks. The incidence of iris tuck, dislocation, iris atrophy was nil in a study group of Daljit Singh (1980). J. Watts

(1979-1983) did not encounter iris tuck, pupil block and iris prolapse in the study of 44 patients implanted with intraocular lens in the anterior chamber.

Jonathan M. Frantz (1988) reported 3 cases with 85 JM anterior chamber IOL had pain photophobia, diminished vision. There was pigment with flare seen in the anterior and posterior surface of the optic of the IOL which had bowed backward touching the anterior iris stroma.

Hyphema is fairly common but usually innocuous complication most frequently occurs between the second and seventh post operative days. It is caused by bleeding from small vessels crossing the wound. Minor trauma may precipitate hyphema in some cases. In a study group of 146 cases subhash P. Kadam (1987) saw hyphema in 3 cases which was well controlled in 4 days. In S. Tony Fernandez, et al's study of 60 IOL implants hyphema occurred in 1 case (IOL used without visilon) and 2 cases (IOL used with visilon), Daljit Singh et al (1983) reported 6.5%. It was 12% in the study group with IOL A.B. Azar 912 anterior chamber IOLs (Arch ophth 1987).

The cornea can decompensate if large amount of endothelial cells are lost depending on surgical technique and type of IOL used, the implantation of IOL following cataract extraction may be more harmful to corneal endothelium than simple cataract extraction(Alpar and Fechner). Average endothelial cell loss following routine intra capsular cataract extarct extraction has been shown to vary between 8% and 12% (Jaffe et al), Worst et al (1984) documented that even momentary contact between PMMA and endothelium caused 20 to 30% cell loss in rabbit and human corneas. In Jaffe's series 35 to 40% endothelial cell occurred in IOL cases (Forstot et al 1977). In Gould's (1980) series the average cell loss was 30% compared with the about 10% of Knight (1978) and in the cases of Sugar et al (1986) 35.2%. The influence of the endothelial microscope is evident from the statistics that involve eyes operated on after 1976. Hirst et al (1977) found an average of 14% endothelial cell loss in cataract with implant versus 13% in cataract without implant. Dron and Waltman (1978) reported 11.6% after uncomplicated cataract extraction versus 4.1% after cataract operation without lens implantation. In complicated lens implantation, especially with presentation of vitreous the cell loss increased to 65-5% (Kraff et al 1978). It is found that

there is a close relationship between cell loss and degree of surgical trauma (John J. Alpar, Paul U. Fechner 1986) Little (1979) described that on 3rd post operative day in a clear cornea without descemet fold, cell loss was 0-10%, in clear cornea with descemet membrane folds cell loss was 10-20% in striate keratitis cell loss was 15-35%, in the area of cornea with firm epithelial edema cell loss occurred 35-60%. In area of cornea with bullous epithelial edema cell loss occur 50-70%, in cloudy cornea cell loss was more than 70% (John J. Alpar, Paul U. Fechner 1986). In FDA study the incidence of corneal endothelial dystrophy (Pseudophakic bullous Keratopathy has been reported to be 1.2% in a year follow up (Apple D.J. et al 1984).

R.K. Mishra et al (1985) reported corneal dystrophy 1% in a series of 185 cases. O.P. Billore et al (1986) reported corneal oedema in 7.9% (Rigid type Anterior chamber IOL implanted cases) and 16.72% (Flexible anterior chamber IOL implants), corneal decompensation 2.7% (Rigid anterior chamber IOL) 11.47% (flexible anterior chamber IOL) in a series of 300 patients. Daljit Singh (1980) reported endothelial corneal degeneration in 2 cases in a series of 7 cases of IOL implants. In the study group of K.C. Mahata persistant corneal edema occurred

in 3 eyes out of 20 eyes.

Jonathan M. Frantz (1988) reported endothelial cell loss 28.5% in 3-6 months period. In study of IOL A.B. Azar 912 anterior chamber intraocular lens the incidnece of corneal oedema was 12%. In surgidev style leiske A.C. IOL study Pseudophakicbullous Keratopathy has been described as a late complication on long term study (Arch ophth 1987). In a study of 44 patients J. Watts (1979-1983) did not come across any such case of corneal decompensation.

Rise in intraocular pressure (above 20.6 mm Hg schiotz) has been reported in 7% cases on 7th day after operation, 1.6% on 15th day and 0.54% on 45th day in a study of 185 cases, (R.K. Mishra et al 1985). J. watts (1979-1983) reported in 2 cases out of 44 cases of anterior chamber IOL implant. Daljit Singh et al (1984) reported glaucoma in 8.33% in a experimental study group in rabbits. In a study of 500 patients O.P. Billere et al (1984) found 7.92% incidence (Rigid anterior chamber IOL implants) and 1.6% (Flexible loop anterior chamber IOL implant), 2% incidence was revealed by V.K. Bidaye (1988). S. Bharti et al (1984-1986) also encountered acute glaucoma in a study group 150 cases. Subhash P. Kadam (1987) noticed 4 cases of 146 patients study. R.K. Mishra et al (1989) found in 3.1% cases.

In a study of 53 patients implanted with IOL A.B. Azar 912 AL IOL the incidence of glaucoma was 13%. In surgical style leiske AC IOL, implantation secondary glaucoma has been described as late complication on long term study (Arch Ophth. 1987).

Cystoid macular edema (Irvine Gass syndrome) is more frequent following intracapsular extraction (particularly when associated with vitreous loss) than uncomplicated extracapsular extraction. Prostaglandin is have been implicated as direct mediator of the noxious stimulus.

In J. Watts (1979-1983) study of 44 anterior chamber IOL implanted cases CME occurred in 1 case. In a study of 53 eyes implanted with semiflexible close loop IOL (IOL AB Azar 91X ACIOL) the incidence was 13%, in surgidev style leiske AC IOL, 3.2% (Arch Ophth 1987). R.K. Mishra et al (1985) reported 15.8% CME appeared on 7th day in 1.6% cases, on 15th day in 2.2% cases and on 30th day in 10% cases. CME disappeared in 2 months in 14%, in 3 months in 7.8% cases and in 1.6% cases it remained unresolved in 6 months. In series of 150 cases CME was experienced in 6 cases (Subhash P. Kadam 1987). The incidence of macular

oedema has been documented highest in anterior chamber intraocular lens implantation, 665 out of 27919 (Recent advances in Ophthalmology by Davidson 1986), Daljit Singh 1982 delineated incidence of clinical CME in 2-3% cases and 40-50% cases angiographically. The incidense remain 10% in a study group of R.K. Mishra et al (1989). S. Bharti et al also mentiond occurrence of CME while studying 158 cases of IOL implants in the anterior chamber, N.C. Khata (1983) reported in one eye out of 20 eyes K.S. Raju (1983), in a study group of 12 patients and S. Tony Fernandez et al (1986) in study group of 60 cases did not encounter any case with CME.

The frequency of Retinal detachment is about the same for pseudophakic and aphakic eyes provided no vitreous loss occurred during surgery and if it did, a proper vitreous toilet was performed (Alpar, Fechner 1986). S. Tony Fernandz et al 1986) reported retinal detachment in one case out of 60 IOL implanted cases. In various studies by different authors (J. Watts, Jonathan M. Frantz, Daljit Singh, R.K. Mishra, O.P. Billore, Subhash P. Kadam, S. Bharti) no such incidence of retinal detachment was encountered.

In the study group of 60 IOL implants 20 patient complained of disturbance in looking at light, 2 cases complained of moving shiny objects in front of the eye 3 cases had tenderness. IOL with intracapsular extraction gave good results as compared to extracapsular extraction. It was concluded that for Indian condition intracapsular extraction with anterior chamber flexible lenses are ideal (S. Tony Fernandez et al 1986).

In the study group (60 IOLs) of S. Tony Fernandez (1986) the visual results achieved after correction or without correction were 6/12 to 6/12 by 70% cases 6/18 to 6/36 by 26.2%. Causes of low vision were macular changes in 8 eyes, corneal opacity in 4 eyes. No reason was found in 4 cases. 4 eyes did not require correction for distant vision, 14 eyes required sphere but no cylinder, 18 eyes required cylinder upto +4D and 2 eyes required above 4D cylinder.

R.K. Mishra et al (1987) revealed that 6/6-6/9 vision was attained by 35% cases, 6/12-6/18 attained by 46%, 6/24 achieved by 14.6% and 6/60 by 6.50% cases. Binocular vision was very good in 40% cases, good in 38%, satisfactory in 9% and poor in 12%. As far as patients satisfaction was concerned 49% (very good) 30% good, 14.5% satisfactory and 6.5% poor.

In the study groups of O.P. Billore (1986) the visual results were 6/12-6/6 in 78% (group I) and 76% (group II), 6/36-6/18 could achieved by 15% (group I) and 17% (group II), CF - 6/60 achieved by 7% each group.

Vilas Bidaye (1988) reported that 6/6-6/12 was achieved by 64%, 6/12-6/24 by 28%, 6/24-6/60 by 7% and 6/60 by 01%.

The visual results in the study group (158 eyes) of S. Bharti et al (1985) were 6/6 by 36-70%, 6/9 by 47.46%, 6/12-6/18 by 12%, 6/24-6/36 by 3% and 4/60 saw by 0.63% cases.

Y.N. Paranjpe (1983) concluded the results of visual acuity in 25 IOL cases were 6/6 by 4 eyes and 6/12 saw by 21 eyes.

In the study group of M.C. Mahata (1985) the results of 20 IOL cases were 6/12 or better saw by 9(60%) 6/18 saw by 4(26.7%) and 6/60 by 2 eyes (12.3%).

J. Watts's (1984) report of visual acuity among the 181 cases, were 6/12 or better achieved in 92% and less than 6/12 was achieved in 8% cases.

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MATERIAL AND METHODS

MATERIAL AND METHOD

The cataract patients attending Out Patient Department of Ophthalmology M.L.B. Medical College, Jhansi were admitted in the hospital. They were devided into two groups. In twenty five patients (i.e. 25 eyes) simple cataract extraction was done without IOL implant and in another twenty five cases the cataract extraction associated with IOL implantation in the anterior chamber was done.

A thorough preoperative evaluation, general, systemic and local examination and routine investigation were carried out, as per proforma attached.

The patient selected for intra ocular implantation were mainly senile cataract willing for IOL implantation and unilateral cataract.

A thorough examination was done with special emphasis on hypertension, diabetes mellitus, enlarged prostate, asthma, nervous patient, thyroid disease, emphysema, cerebrovascular insuffiaiency.

The patient with unioculer eye, complicated cataract, diabetic retinopathy, history of retinal detachment, endothelial corneal dystrophy, iris atrophy keratitis with corneal opacity, chronic glaucoma not controlled with medical treatment and high myopia were excluded from the present study. The patients having vitreous prolapse or vitreous loss during surgery were also excluded from present study.

The patients undergoing for IOL implantation, their refractory condition was determined preoperetively and implant of appropriate power was placed in anterior chamber.

PRIMARY REFRACTORY METHOD

A detailed past history regarding refractory condition of the patient was taken. If he was using any glasses and its power was recorded.

The power of the intreocular lens to be implanted was calculated by the formula:

$$13 + (PRE \times 1.25)$$

(PRE = Primary refractory error)

RETINOSCOPY

In this method retinoscopy was carried out at the time of operation. After extraction of cataract visilon was injected into the anterior chamber. Thereafter retinoscopy was performed by an assistant and thus refractory condition of the patient was determined.

Selection of Intraocular lens

We had three types of 'flexible open loop angle fixated anterior chamber lenses'.

Shepard universal IOL, Dubroff type (radial - C AC universal IOL) and J-Loop IOL (Shah and Shah)

PREOPERATIVE PREPARATION

Night before the operation, patient was kept under light sedation with tab. Diazepam 5 mg., acetazolamide 500 mg. and antibiotic drops (Chloromycetin).

Dilatation of pupil was done with drosyn eye drops 10% started two hour prior to operation.

Tab. Dimox 500 mg. was given two hour prior to operation.

Injection Mannitol 20% (0.3/kg weight) I/V started 20 minute before the operation (in cases selected for IOL implants).

Anaesthesia : Topical instillation of Lignocain 4%, Facial block and retrobulbar injection with lignocain 2% along with 1:1000,00 epinephrine.

Operation : After dropping the part, lid sutures were passed in upper and lower lid, suture passed in superior rectus muscle and fixed. A limbus based conjunctival was made and vessels cauterised. A section was made from 9.0' clock to 3.0' clock position and preplaced suture passed at 12.0' clock position. One peripheral iridectomy was made. Intracapsular cataract extraction was performed with cryomethod. The cases which had accidental extracapsular extraction were not included in the present study.

Visilon was introduced into the anterior chamber followed by implantation of the intraocular lens in the anterior chamber.

The section was closed with 5 to 7 corneoscleral sutures with 8-0 monofilament.

The operative complications were observed and noted on the proforma.

Post Operative Care

All patients were kept under tab. Septran 2 BD, Tab. Brufen 400 mg 1 TDS, Tab. B complex and daily dressing for seven days of the post operative period.

The patients were discharged from the hospital 7 days after the operation. During their hospital stay day to day observation was done and noted.

The follow up was carried out initially after 7 days of discharge when stitches were removed. Thereafter every 15 days till 6 weeks followed by monthly check up in the Out-Patient Department for 6-10 months.

The examination were carried out as per proforma, with the help of diffuse illumination, oblique illumination, slit lamp, gonioscopy, indirect, direct ophthalmoscopy, retinoscopy and visual acuity was noted. Tryglasses and tonometry was done in relevant cases.

[redacted]

OBSERVATION

OBSERVATION

The present study has been undertaken in fifty patients of cataract admitted in the hospital of M.L.B. Medical College, Jhansi. They were divided into two groups. Group A and group B. Each group consisted of 25 patients.

Group A: All cases were subjected for intracapsular cataract extraction.

Group B: Intraocular lens implantation were done in the anterior chamber after intracapsular cataract extraction.

The study was carried out from operative period to post operative follow up for 6-10 months commencing from August 1988 to July 1989. The average period of follow up was 7 months.

The diagnosis of cataracts have been shown in table 1, 2.

Table 1

Different Types of Cataract

Diagnosis	Group A		Group B	
	No.	%	No.	%
Mature Cataract	19	76	15	60
Immature Cataract	6	24	7	28
Traumatic Cataract	-	-	3	12
Total	25	100	25	100

There were 19 cases of senile mature cataract in group A and 15 cases in group B. The number of immature cataracts were 6 in group A and 7 in group B. Three cases of traumatic cataract were also included in group B. Condition of the other eye has been shown in table 2.

Table 2

Condition of the other eyes

Diagnosis	Group A		Group B	
	No.	%	No.	%
Aphakia	4	16	-	-
Immature Cataract	6	24	3	12
Normal	15	60	22	88
Total	25	100	25	100

In group A there were 4 cases with aphakia and 6 cases with immature cataract in the other eyes where as in group B only 3 cases had immature cataract in the other eyes.

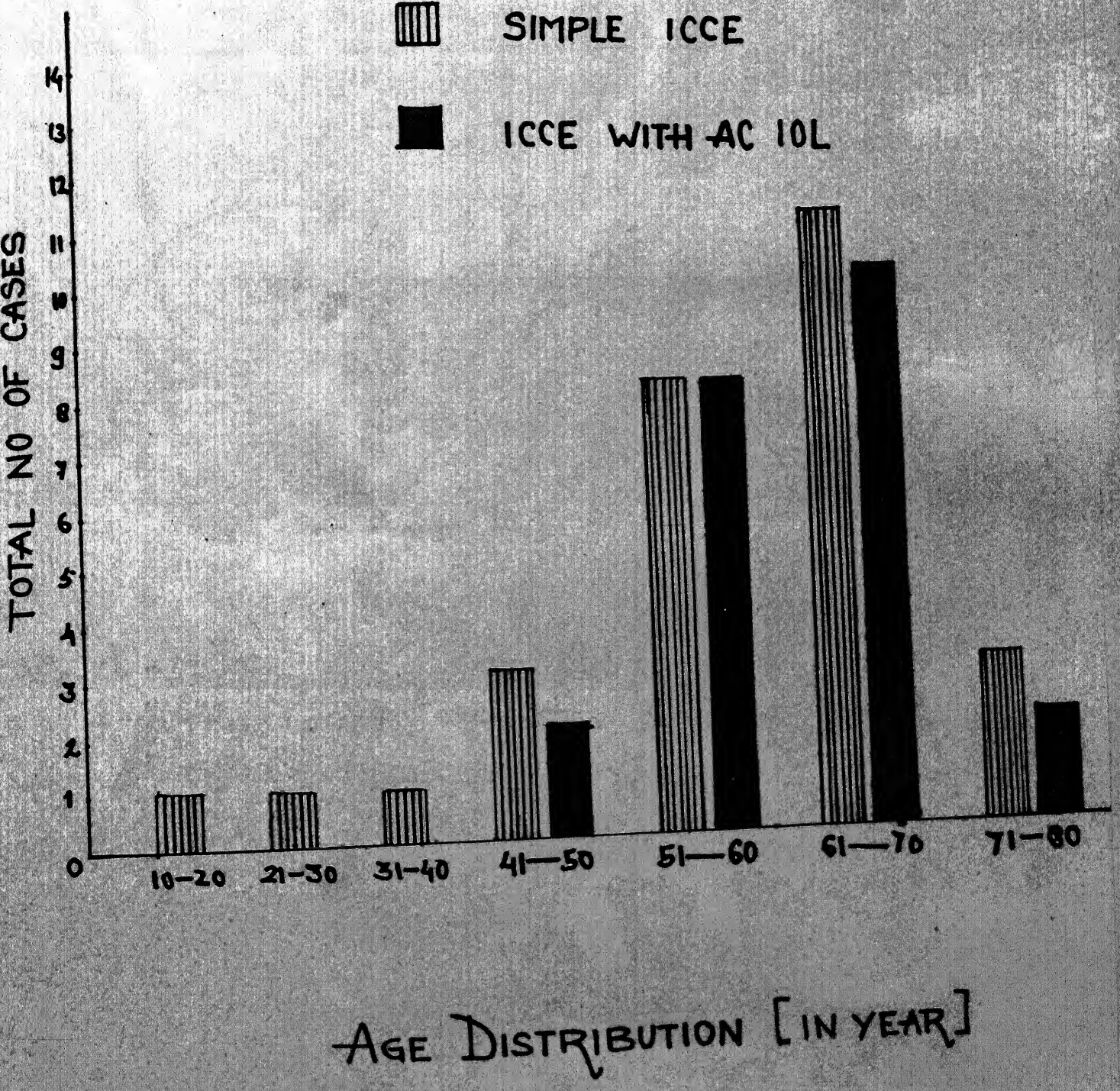
The age and sex distribution of the selected cases has been shown in table 3.

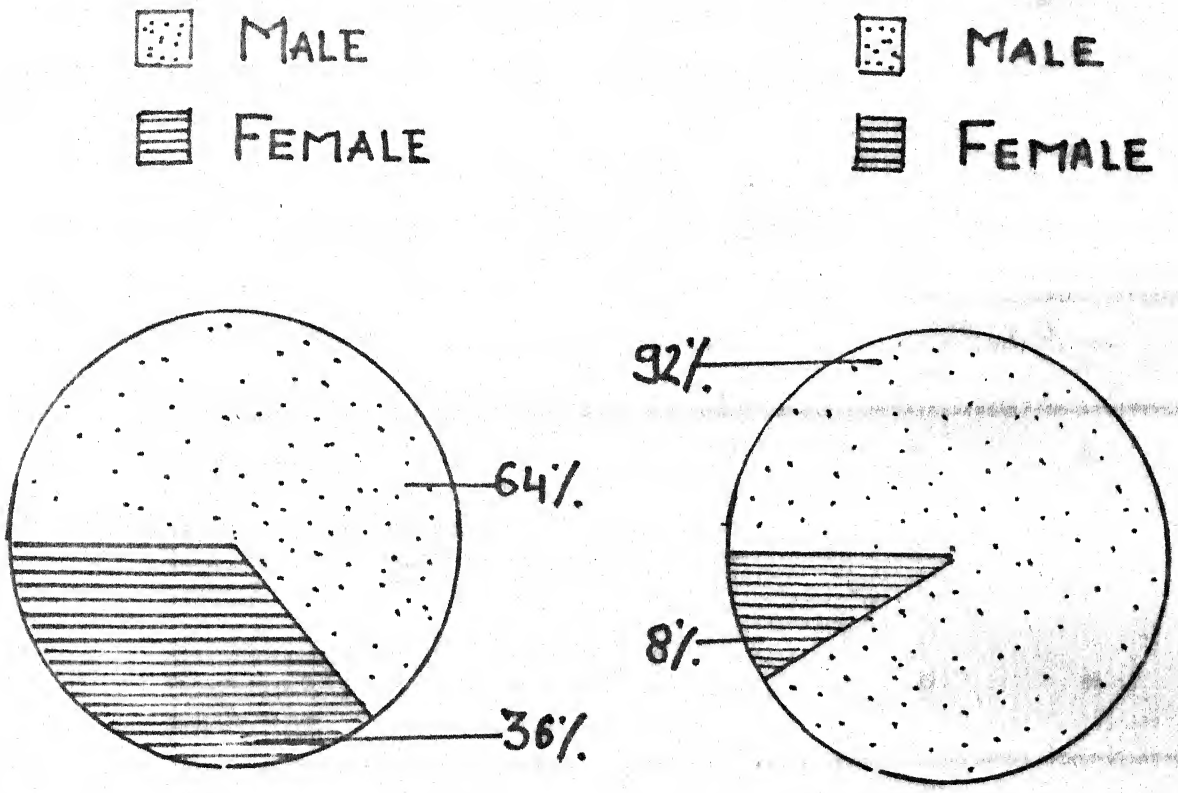
Table 3

Age-Sex Distribution of the patients

Age group	GROUP A(Without IOL)						GROUP B(With IOL)					
	Male		Female		Total		Male		Female		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
10-20	-	-	-	-	-	-	1	4	-	-	1	4
21-30	-	-	-	-	-	-	1	4	-	-	1	4
31-40	-	-	-	-	-	-	1	4	-	-	1	4
41-50	2	8	1	4	3	12	2	8	-	-	2	8
51-60	6	24	2	8	8	32	7	28	1	4	8	32
61-70	7	28	4	16	11	44	9	36	1	4	10	40
71-80	1	4	2	8	3	12	2	8	-	-	2	8
Total	16	64	9	36	25	100	23	92	2	8	25	100

The youngest patient in the study group A (Simple cataract extraction) was 45 year old and the eldest was 72 years. The average age was 64 year. There were 9 females and 16 males in group A.


SIMPLE ICCE
ICCE WITH AC IOL
TOTAL NO OF CASES
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
10-20
21-30
31-40
41-50
51-60
61-70
71-80
AGE DISTRIBUTION [IN YEAR]



WITHOUT IOL
(Simple catarat Extraction)

WITH IOL

SEX DISTRIBUTION

In group B (ICCE with IOL implant) the youngest patient was 18 year old and eldest 74 year old. The average age was 61 years. The total number of females were 2 and males 23.

Table 4

Operative Complications

Complications	Group A		Group B	
	No.	%	No.	%
Hyphaema	1	4	1	4
Incarceration of haptic into the wound	-	-	-	-
Splitting of Descemet's membrane	-	-	-	-

Note: Cases with retrobulbar haemorrhage, vitreous loss and accidental extra capsular extraction or rupture of capsular membrane were excluded from the study.

Hyphaema was encountered in one case in group A and one case in group B. Bleeding subsided after 2-3 minutes in both the cases. Some difficulty was experienced in placing IOL into the anterior chamber. There were no other complications during operation in both the groups. Cases who sustained retrobulbar haemorrhage, vitreous loss or vitreous in anterior chamber and unplanned extracapsular extraction or rupture of lens capsule were excluded from the present study.

Table 5

Early Post Operative Complications

Complications	Group A		Group B	
	No.	%	No.	%
Striate Keratitis	5	20	6	24
Corneal oedema	1	4	-	-
Flat or Shallow anterior chamber	1	4	-	-
Hyphaema	1	4	2	8
Iridocyclitis	1	4	4	16
Raised intraocular pressure	-	-	-	-
Iris tuck	-	-	1	4
Riding of pupillary Margin over IOL	-	-	1	4
Precipitate deposits on the IOL	-	-	2	8
Pigmentary deposits	-	-	3	12
Distortion of pupil	-	-	2	8
Pupillary capture	-	-	-	-
Choroidal detachment	-	-	-	-

Striate Keratitis was found more in IOL implanted cases (24%) than nonimplanted eyes (20%). It disappeared in all cases within a week excepting two cases of group B in which striate Keratitis persisted for longer period and took 2 weeks. These were the cases requiring more manipulation during IOL implantations.

Mild degree of corneal oedema was noticed in one case of group A, which subsided within a week. There was no such occurrence in any case of group B.

Flat or shallow anterior chamber was encountered in one eye of group A. The occurrence of hyphaema was more in IOL implant group than non-implanted cases. In one case of IOL implant, the blood got organised on the surface of the IOL however it disappeared within a month. In all other cases blood disappeared from anterior chamber within one week.

The incidence of iridocyclitis was more in IOL implant cases (16%) as compared to nonimplant case (4%). It was mild in nature in one case of group A and two cases of group B. Whereas moderate in nature in two cases of IOL implant (Group B). Iridocyclitis disappeared in 2 to 4 weeks period when aggressive therapy was instituted in the form of subconjunctival injection of Decadron, Atropin, and Gentisyn along with topical cycloplegic mydriatic, antibiotics and corticosteroids and systemic antibiotics, antiinflammatory

(Brufen 400mg 1 TDS) and corticosteroid (Prednisolon) drugs.

Iris tuck was observed in one case of IOL implant, distortion of pupil was seen in two cases of group B. There were pigmentary deposits on the IOL surfaces in three cases (12%) when examined with slit lamp. Pigmentary deposits disappeared within 4 weeks. In one case of IOL implant the pupillary margin was seen overriding on the upper part of the IOL. Precipitate deposits were observed in two cases which were associated with iridocyclitis.

Table 6

Complications in late postoperative period

Complications	Group A		Group B	
	No.	%	No.	%
Endothelial corneal dystrophy	-	-	-	-
Cystoid Macular edema (CME)	1	4	-	-
Retinal detachment	-	-	-	-
Iris atrophy	-	-	-	-
Uveitis, Glaucoma, Hyphaema (UGH) syndrome	-	-	-	-
Adhesion between iris and IOL	-	-	-	-
Persistent iritis	-	-	-	-
Flashing of light	-	-	2	8
Tenderness	-	-	-	-

During follow up of six weeks period cystoid macular edema (CME) was encountered in one case (4%) of group A. There was no such occurrence in IOL implant group. Two cases with IOL implant group persistently complained of flashing of light in front of the eye till 3 months, which gradually subsided. There was no occurance of corneal endothelial dystrophy, uveitis, glaucoma, hyphaema (UGH) syndrome, retinal detachment, formation of adhesion between haptic and iris and iris atrophy in any case.

The number of complications were high in IOL implant group as compared to non implanted eyes. Complications were seen in more number of cases in group B than group A (Table 7).

Table 7

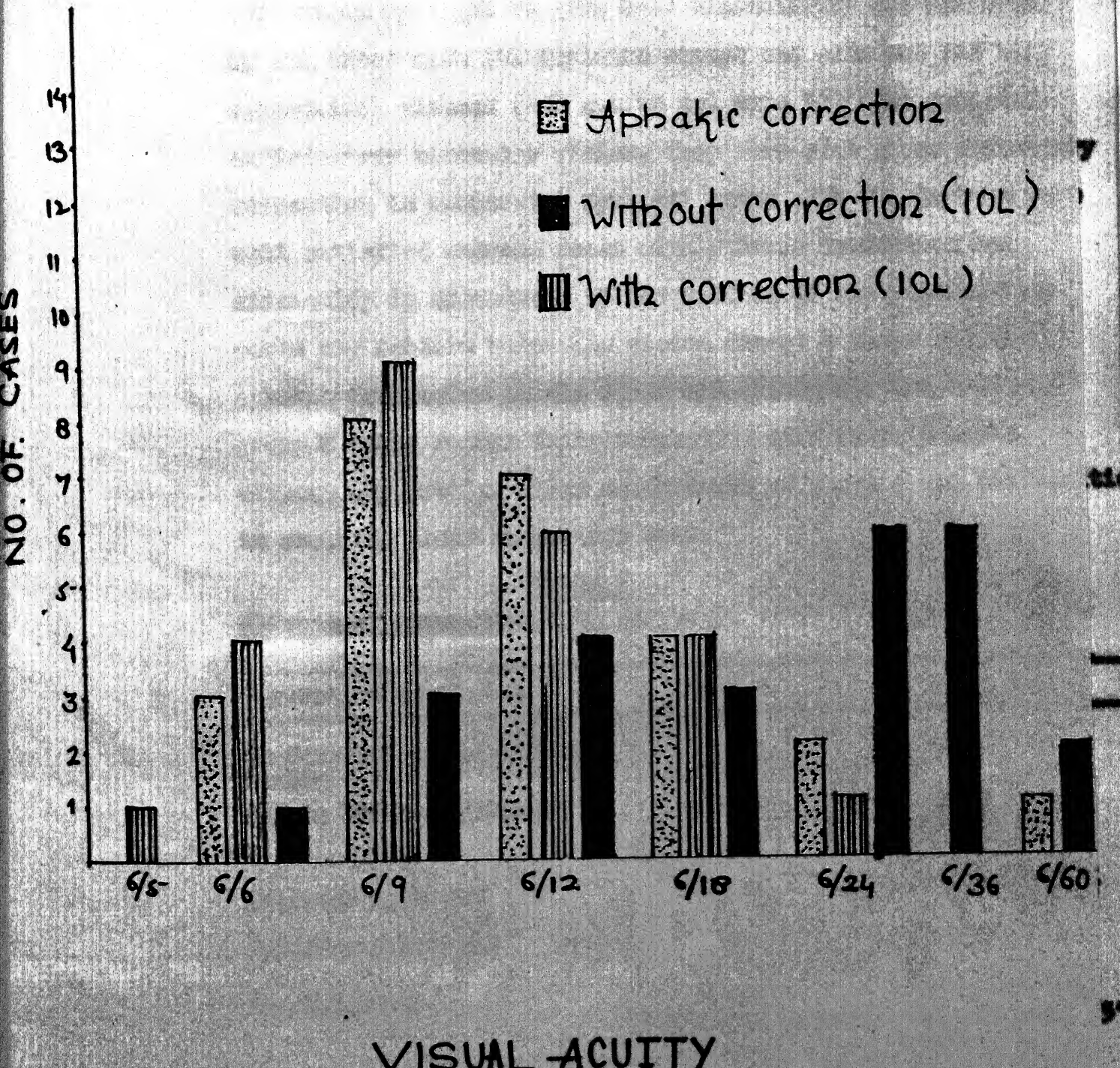
Number of Complications	Group A		Group B	
	No.	%	No.	%
Total number of complications	11	44	24	96
Total number of eyes having complications	5	20	8	32
Eyes with more than one complication	3	12	5	20
Eyes without complications	20	80	17	68

Table 8

Visual acuity results after correction with spectacle lenses.

Visual acuity	Group A	Group B
6/6 - 6/12	18(72%)	20(80%)
6/18- 6/24	6(24%)	5(20%)
6/36- 6/60	1(4%)	-

When visual acuity was observed after correction with glasses 6 weeks after operation, 80% cases of IOL implant achieved 6/12 or better vision as compared to 72% cases without IOL implant. 6/24 or better vision was was achieved by 20% cases of IOL implant as compared to 24% cases without implant. In one case without IOL impant the visual acuity remained 6/60 due to cystoid macular oedema. The vision of the patient improved to 6/36 when systemic corticosteroid was administered for two weeks. In 16% cases (Table 9) with IOL implant, did not require any correction for distant vision, 36% required spherical correction upto ±2 whereas 44% required spherical correction along with cylindrical correction upto ±2D. One case with IOL implant required high cylindrical correction (-1D sph/ -4D cyl axis 35° 6/9). This was the case in which riding of


Aphakic correction
Without correction (IOL)
With correction (IOL)
NO. OF. CASES
14
13
12
11
10
9
8
7
6
5
4
3
2
1
6/5
6/6
6/9
6/12
6/18
6/24
6/36
6/60
VISUAL-ACUITY

pupillary margin over IOL occurred. In aphakic correction (group A 60% cases required only spherical correction whereas 40% cases required spherical correction along with cylindrical correction upto ±2D to ±4D. Good binocularity was achieved by all cases with IOL implants except one case who had high cylindrical glasses (-4D sph/4D cyl axis 55° 6/9) achieved satisfactory binocular vision. They were also given refractory correction in unoperated eye. All cases with IOL implant were well satisfied whereas cases with aphakic correction had difficulty in adjustment to new tuction of the vision. They could not achieve binocular vision except 4 cases who had aphakic correction in the other eye (Table 9). The cases of group B could resume their respective work after 6 weeks without any problem where as patients of group A had difficulti in resuming their respective work.

Table 9

Refractory correction with different types of lenses.

Correction of vision	Group A	Group B
No Correction for distant vision	-	4(16%)
Sphere but no cylinder	19(60%)	9(36%) Sphere upto ±2D
Cylinder upto ±2D	10(40%)	11(44%) Sph upto 2D Cyl upto 2D
Cylinder above ±2D	-	1(4%)
Binocularity	4(16%) (Bilateral aphakia)	With -2D sph/ -4D cyl axis 55° 6/9

INTRAOCULAR LENS IMPLANT IN THE ANTERIOR CHAMBER (ON 5th POSTOPERATIVE DAY - MILD CIRCUMCILLIARY CONGESTION PRESENT)

INTRAOCULAR LENS IMPLANT IN THE ANTERIOR CHAMBER (RIGHT EYE, VISION 6/6 WITH CORRECTION 20 WEEKS)

A CASE WITH IRIS TUCK IN ANTERIOR CHAMBER INTRA OCULAR LENS IMPLANT (VISION 6/9 WITH CORRECTION AT 8 WEEKS)

ANTERIOR CHAMBER INTRAOCULAR LENS, PLACED IN PATIENT WITH TRAUMATIC CATARACT AND INJURY TO THE IRIS (VISION 6/6, WITHOUT CORRECTION, AT 10 MONTHS)

DISCUSSION

DISCUSSION

The cataract is mainly problem of old age. Surgical intervention is the only remedy of cataract. The quality of vision obtained after cataract extraction and intraocular lens implantation, more or less closely resembles that of a phakic eye than the vision obtained by any other method of aphakic correction i.e. spectacles and contact lenses.

There have been variable number of complications associated with intraocular lens implantation which are reported to be higher than simple cataract extraction.

Since 1949, when Ridley first implanted an IOL into the posterior chamber, there have been tremendous innovative changes from time to time in the field of intraocular lens implantation. Ridley reported higher incidences of complications of intraocular lens implantation during his earlier series which were high post-operative Myopia (-15D to -20D), severe post-operative reaction, iritis, occlusion of the pupil due to dense inflammatory membrane, opacification of posterior capsule, loss of anterior chamber, hyphaema, secondary glaucoma, iris atrophy from pressure of

intraocular lens (PMMA), decentering and dislocation of intraocular lens. The complications of Ridley's IOL implantation led to inception of anterior chamber IOL implantation, first by Baron 1952. Anterior chamber intraocular lens implantation of that time also resulted into high rate of complications mainly corneal decompensation. Further discovery took place and iris clip or iris fixed lens came into existence, in 1958, first by Binkhorst. Iris clip or iris fixated lenses were widely used untill 1978. These lenses were also associated with high incidences of complications, mainly iritis, iris atrophy, dislocation of lens, pigment dispersion and poor pupillary play. Hence the use of iris supported iris clip lenses declined abruptly thereafter. Since 1980 anterior chamber lenses and posterior chamber lenses have been widely used. The advantages of anterior chamber lenses are many, as they can be used in cases of intracapsular or extracapsular cataract extraction, can be implanted primarily or secondarily and easy to place without sophisticated equipments. In trained hands the anterior chamber lens implantation give excellent results. In the present study the complications in simple cataract extraction of 25 patients have been compared with the complications in

25 cases of cataract extraction along with intraocular lens implantation in the anterior chamber. The minimum period of followup has been 6 months and maximum 10 months. Average follow up remained 7 months.

OPERATIVE COMPLICATION

The operative complications were observed equal in both the groups. Hyphaema was encountered in 4% cases in each group. In simple cataract extraction (ICCE) the incidence of hyphaema have been described, 7.1% and 4.7% by Oxford cataract treatment and evaluation team (OCTET, 1984) and Gholam A. Peyman respectively. Whereas the incidence in ICCE with IOL implantation have been reported 12.3% (Subhash P. Kadam 1987) and 8% (AJO 1969). Cases associated with retrobulbar haemorrhage are ideally postponed (Gholam A. Peyman, Edward Duke Elder, Nikhil C. Kaushik 1983, Subhash P. Kadam 1987). Vitreous loss or vitreous in anterior chamber during operation may lead high incidence of postoperative complications in both type of cases i.e. simple cataract extraction and cataract extraction with IOL implantation. The complications include cystoid macular edema, peaked or updrawn pupil, endothelial corneal dystrophy and retinal detachment (Alper, Fechner 1986) when vitreous pressure is high or there is positive iris vitreous pressure into the anterior chamber it is difficult to implant an IOL into the

anterior chamber although with visilon such problem is minimized (S. Tony Fernandez, 1986) unplanned extra capsular extraction or accidental rupture of capsule results in post-operative opacification of capsule. Therefore above mentioned cases were excluded from the present study.

POST OPERATIVE COMPLICATIONS

Corneal complications mainly striate keratitis were more in anterior chamber intraocular lens implantation (24%) as compared to simple cataract extraction (20%), although there was no significant difference between the two groups. These findings are in accordance with Daljit Singh et al (1984) - 16.1% (with IOL), O.P. Billore et al (1986) - 19.82 and 29.5%, M.S.D. Jaju (1983) - 16.6% and S. Tony Fernandez 20.1%. However R.K. Mishra et al (1985) reported this incidence to be 23% in simple cataract extraction and 70% (Mild to Moderate) in the IOL implantation which is quite higher. Higher incidences are also reported by M.C. Mehata (1983) - 75% (in IOL cases). This could be with either no use of visilon, more manipulation during surgery or improper formation of anterior chamber during surgery. Contrary to it lower incidences have been reported

by Vilas Bidaye (1988) 2%, and Subhash P. Kadam (1987) 4.4% which are too low and needs no explantation.

The incidence of corneal oedema was 4% (one case) seen in simple cataract extraction. It signifies occurrence of trauma to endothelium during surgery. However no corneal oedema was seen in any case of IOL implant. The incidence given in literature is variable. Oxford cataract treatment and evaluation team (OCTET 1984) found 0.003%, Gholam A. Peyman found in 1% out of 500000 operation, J.F. Acheson et al (1980) reported 9% in cases of simple cataract extraction. In intraocular lens implant cases the incidence of corneal oedema have been reported by C.P. Billere (1986) 7.9% (in rigid IOL) and 16-72% (flexible IOL), M.C. Mahata (1984) 75% and in Surgidev closed loop IOL (Arch Ophth, 1987) 12%.

The incidence of hyphaema was more in group B (8%) than group A (4%). In simple cataract extraction without IOL implant the incidence of hyphaema was slightly higher in comparision with Oxford cataract treatment and evaluation team (1984) who figured 0.002%, J.F. Acheson et al (1988) found 2.1%, I.M. Huddappa et al (1985) found 2.7%, Arun Mathur et al found 1.11%, whereas figure 6% of P.M. Nagpal (1985) is higher. The hyphaema in this serial of our study was small, disappeared within one week

and needs no special comment.

In IOL implant group Subhash P. Kadam (1987) S. Tony Fernandez (1986), Daljit Singh (1983), Arch Ophth 1987, reported 2.1%, 4.3%, 6.5% and 12% respectively. All these studies are lacking control group. These complications are comparable to our present series of study in IOL implant group. In present study and the review ofliterature shows a definite higher incidence of post-operative hyphaema in IOL implant group in comparision to the simple lens extraction group. This hyphaema resolved in all the cases within one week except in one case of IOL implant having persistent of organised blood on anterior surface of lens. This organised blood also disappeared in one month leaving no adverse effect on vision.

Incidence of iridocyclitis was more with IOL implants (16%) than simple cataract extraction (4%), may be because of excessive manipulation, surgical trauma to iris or mechanical foreign body irritation by the implant itself. R.K. Mishra et al (1985) reported 22% (Mild to moderate) in simple cataract extraction and 22% mild and 63% moderate in IOL implant cases. In simple cataract extraction Daljit Singh (1981) P.N. Nagpal (1983), Arun Mathur et al and GCRET (1984) reported 3.4%, 6%,

8.93% and 0.6% respectively, whereas in IOL implantation O.P. Billore (1986), Vilas Bidye (1968), Subhash P. Kadam (1987). N.C. Mahata (1983), Daljit Singh et al (1983) S. Tony Fernandez (1986) and N.S.D. Raju (1983) reported 9.8%, 2%, 11.6%, 20%, 11.5%, 6.6% and 8% respectively. The higher incidence of iridocyclitis in IOL implant group is comparable to most of the authors report and resolved with medical treatment in our series leaving no adverse effect.

Shallow anterior chamber is rarely encountered if proper corneoscleral sutures are applied to prevent wound leakage during early postoperative period. In simple extraction Gholam A. Peyman figured 4%, Oxford cataract and evaluation team (1984)-0.3%, Laxman Rao et al (1980)-7.9%, B.T. Mashati et al (1982)-0.5%, I.M. Muddappa (1986-5.3% and 2.7%, H.K. Singh et al (1981)-12.2% and Arun Mathur et al reported 0.67%. Our figure of 4% in cases of simple cataract extraction fall in these group. This was attributed to the history of trauma in the eye on 2nd day. The anterior chamber was again formed on next day. Occurrence of shallow anterior chamber in IOL implant group have been reported only by few authors

like Daljit Singh et al (1985) who reported 1.6% and S. Bharti et al reported 1.8%. We did not come across such incidence in our study. Collapse of anterior chamber in IOL implant group may lead to serious complication due to the damage of corneal endothelium by implant. But such serious complication can be avoided by proper stitching of wound during surgery, formation of anterior chamber with visilon itself, proper protection of eye in post operative period.

Tucking of iris is a common finding in anterior chamber lens implantation. The incidence have been reported more in rigid anterior chamber IOL as compared to flexible loop anterior chamber IOL. R.K. Mishra et al (1985) reported 15%, O.P. Billore found 22.02% (rigid IOL) and 8.19% (flexible IOL), Subhash P. Kadam (1987) reported 4.1%. Our figure of 4% is in accordance with the above figures. The patient showed no adverse effect postoperatively in follow up.

The incidence of riding of pupillary margin on IOL was found to be 4% in the present study. The figure is slightly higher than the figure reported 2% by R.K. Mishra et al (1985). The riding of pupillary margin on

IOL led to slight tilting of lens and high degree of astigmatic correction was needed in this patient. As the patient's visual acuity was good after correction with astigmatic glasses, no surgical manipulation was attempted. The riding of pupillary margin disappeared after 8 weeks of follow up.

The riding of pupillary margin is not serious complication and may disappear spontaneously after some time as seen in our case, yet it can be avoided by use of strong miotic after cataract extraction and before IOL implant is placed.

The incidence of pigment deposit was seen only in IOL implant cases. In present study the figure of such occurrence was 12% which is similar to figure 13.11% as reported by O.P. Billere whereas R.K. Mishra et al (1985) reported quite high incidence (30%). These pigments disappeared in all cases within one month, but no effect in vision and may be attributed to iridocyclitis in these cases.

Deposition of precipitates were found in 8% cases in our study. This figure coincides with 7% as reported by R.K. Mishra et al (1985), these deposits were seen on examination by binocular loupe and were among

the three cases of pigmentary deposits seen by slit lamp. They require no special comment.

Incidence of cystoid macular edema was only seen in 4% cases of simple cataract extraction. Our figure of 4% is slightly higher than the incidence of 2% reported by P.N. Nagpal and 3% by J.F. Acheson (1988). On the other hand this incidence of our study is lower than R.K. Mishra et al and Jaffe et al who reported 9% and 8.5% respectively. There was no such occurrence in IOL implant group in the present study. In IOL implant group J. Watts (1984) reported 2.2%, R.K. Mishra reported 15.8%, Baljit Singh (1982) 2-3%, M.C. Mehata (1983) reported 5% and Surgidev closed loop IOLs (Arch ophth 1987) was reported 13%.

Symptoms like disturbances in looking at light and shiny objects were seen only in IOL implant group in 8% cases. These symptoms appear due to optical characteristics of intraocular lens, which causes internal reflexion of light. S. Tony Fernandez reported such incidence of disturbances in looking at light in 33% and having shiny objects in 5% cases. Jonathan M.

Frantz also reported in 3% cases. These symptoms also disappeared in all cases of our series within 2 months with the adaptation of patients to these problems.

VISUAL ACUITY

Visual acuity results were better in IOL implant group than the cases of aphakic correction of simple cataract extraction.

In group B (IOL) 80% cases achieved 6/12 or better vision as compared to 72% of group A (non implant). Rest of the cases of IOL implant achieved 6/24 or better vision whereas 4% of nonimplant group could obtain only 6/60. Cystoid macular oedema was attributable to poor vision in such case.

In the present study the percentage of aphakic corrected cases (non implant group) achieving 6/12 or better vision were similar to P.N. Nagpal et al who figured 73% and Laxmman Rao figured 69%, whereas figures of J. Watts (1984)-83% and OCTET-80% are superior to our results.

In IOL implant cases the percentage of cases achieved 6/12 or better vision were better than S. Tony Fernandez who reported 70%, Vilas Bidaye reported 64% and M.C. Mahata (1983) who found 60%. Our figure coincide with R.K. Mishra et al-81% and O.P. Bhllore -78% whereas

reports of J. Watts ~92%, Y.M. Paranjpe ~94% and S. Bharti et al ~90% are better than our results.

Binocular vision was obtained by almost all cases of group B as compared to 16% cases of group A. These 16% cases of aphakic correction, were having aphakia in the other eye also whereas cases with normal eye or immature cataract in the other eye developed diplopia. In IOL implant cases, the patients were well satisfied as far as their binocularity and visual acuity was concerned. These patients did not face any problem after 6 weeks as compared to nonimplanted eyes having aphakic correction.

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CONCLUSION

CONCLUSION

The present study has been carried out to compare the complications in cataract extraction with and without anterior chamber intraocular lens implantation and to evaluate the use of anterior chamber intraocular lens implant.

The following conclusions are drawn:

1. The incidence of complications like hyphaema iridocyclitis, striate keratitis are higher in aphakia with intraocular lens implants but can be treated with medical treatment, leaving no adverse effect.

2. Complications like iris tuck, overriding of pupillary margin over IOL, distortion of pupil are problems sometime faced in aphakia with intraocular lens implant but with no adverse effect on the prognosis.

3. Flashing or glaring of light are more commonly seen in aphakia with intraocular implant but patient easily adapts to it within two months.

4. Corneal complications like endothelial corneal dystrophy, uveitis, glaucoma, hyphaema (UGH) syndrome, persistent iritis, iris atrophy, adhesion between iris and IOL, are commonly reported complications in aphakia with IOL implant but no such incidence occurred in any of our series with the fallow up period of 6-10 months. This require more prolong fallow up.

5. Visual acuity, binocular vision, no enlargement of image and better field of vision are certain greater advantaged in aphakia with intraocular lens implant.

6. In selected cases anterior chamber intraocular lens has many advantages and comparatively not much of risk involved.

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APPENDIX

PROFORMA FOR EXAMINATION

CASE NO.

1. Name of Investigator:
2. Surgeon I/C.
3. Place: Medical College, Hospital Jhansi
   Deptt. of Ophthalmology

Details of Patient

1. Name
2. Age/Sex.....Wd/Bed....
3. Address
4. Occupation
5. Socio Economic Status
6. In habit of taking any intoxicant

A. PRESENTING SYMPTOMS:

1.
2.
3.

B. A brief history of present illness:

- PAST HISTORY:

H/O Diabetes
Hypertension
Any other :

Family History :

Examination:

General examination

- CVS
- Respiratory System
- CNS
- Abdomen

LOCAL EXAMINATION

		Rt.	Lt.
1.	Facial Symmetry		
2.	Eye brows		
3.	Eye Lashes		
4.	Eye lids		
5.	Conjunctiva - Bulbar		
	- Limbal		
	- Palpabral		
	- Intermargical strip		
6.	Cornea - Size		
	- Shape		
	- Surface		
	- Curvature		
	- Lustre		
	- Transparency		
	- Sensitivity		
7.	Anterior Chamber		
	(i) Depth Normal/Shallow/deep		
	(ii) Contents - Colour		
	- Nature		
	- Flare if any		
8.	Iris - Colour		
	- Surface		
	- Pattern		
	- Atrophy (if any)		

9. Pupil - Size
- Shape
- Colour
- Reaction to light
  - Direct
  - Consehsual

10. Lens - Position
- Transparency
- Any other finding

11. Visual acuity Rt. Lt.

12. Digital tension

13. Tonometry Schiotz :
Applanation :

14. Fundoscopy :

15. Gonioscopy :

16. Perimetry :

17. S/L examination :

18. Refractory error - Primary refractive
- Retinoscopy

19. Diagnosis :

INVESTIGATION :

(i) Urine examination
(ii) Blood routine examination
(iii) Blood Sugar

<u>OPERATIVE HISTORY</u>

1. Date of operation :

2. Type of anaesthesia

3. Type of Surgery :

4. Use of vision :

5. Type of lens implantation :
   - Power of the lens :

6. Complications

Type	Rupture of lens	Vitreous Prolapse/ loss	Hyphema	Iris injury	Any other

Post operative follow up Rt/ Lt eye

Date of exam	Period	Conjuctiva	Condition of wound	Cornea	A/C	Postion of lens	Iris	Pupil	Others